

REMARKS

I. INTRODUCTION

Independent claims 11, 13 and 15 have been amended as indicated above to remove minor informalities therefrom, and clarify the subject matter recited therein. New claims 21-23 have been added. Claims 1-10 were previously cancelled, and claims 19 and 20 were previously withdrawn from consideration pursuant to a restriction requirement, all without prejudice. Applicants reserve the right to pursue the subject matter in the cancelled and/or withdrawn claims in one or more continuation and/or divisional applications claiming priority from the present application.

Accordingly, claims 11-18 and 21-23 are currently under consideration in the present application. Provided above, please find a claim listing indicating the current amendment to independent claims 11, 13 and 15, the addition of new claims 21-23, and the status of other claims on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. It is respectfully asserted that no new matter has been added. Exemplary support for the amendment to independent claims 11, 13 and 15, and addition of claims 21-23, can be found in the originally-filed application, including the specification, drawings and/or original claims thereof. (See, e.g., Substitute Specification, paragraphs [0046], [0051] and [0056]).

II. REJECTIONS UNDER 35 U.S.C. § 103 SHOULD BE WITHDRAWN

Claims 11-14 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over U.S. Patent No. 5,507,164 issued to Trausi (the "Trausi Patent"), in view of U.S. Patent No. 6,044,895 issued to Kuttner et al. (the "Kuttner Patent"). (See

Office Action, p. 2). Further, claims 15-18 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over the Trausi Patent, in view of the Kuttner Patent and U.S. Patent No. 3,976,981 issued to Bowden (the "Bowden Patent"). (*Id.*, p. 6).

Applicants respectfully assert that the Trausi Patent, taken alone or in alleged combination with the Kuttner Patent and the Bowden Patent, fails to teach or suggest the subject matter recited in amended independent claims 11, 13 and 15, or the claims which depend therefrom respectively, for at least the following reasons.

"To reject claims in an application under Section 103, an examiner must show an un rebutted *prima facie* case of obviousness." *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention. "The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere, Co.*, 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and

the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*, 383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the “TSM test”). See *In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit’s application of the TSM test, see *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007) the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; see *In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, *21 (October 12, 2007). Further, the Court underscored that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742.

However, “the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure.” *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O’Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the suggestion and the expectation of success must be in the prior art, not in applicant’s disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991) (citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. See *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references’ general nor specific teachings may be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA 1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985).

Amended independent claim 11 recites, *inter alia*, a device for press-forming at least one portion of a material according to at least one predetermined condition, comprising

a state variable detector configured to measure a state variable comprising a metal mold distortion amount, or the state variable and at least one of state variables comprising a punch reaction, a metal mold temperature, a work piece deformation amount or a work piece temperature during the formation of the at least one portion of the material, and a processing condition computer arrangement configured to determine from a first moment to a second moment at least one particular processing condition using (i) a first influence function matrix for indicating a relation between a material characteristic of the material and a correction amount of the at least one particular processing condition, and (ii) a second influence function matrix for indicating a relation between the state variable and the correction amount of the at least one particular processing condition, and

a processing condition controller configured to:

- (i) control the at least one processing condition from processing conditions comprising at least one of a punch movement speed, a die movement speed, a metal mold temperature or a blank holding force based on the at least one processing condition,
- (ii) correct an initialization value C0(i) of the at least one processing condition using:

$$\underline{C0(i) \text{ (after correction)} = C0(i) \text{ (initialization value)} * (1 + \sum_{(i=1-L, j=1-M)} (T1(i,j) * (P(j)/P0(j) - 1)))}$$

where T1(i,j) is an influence function matrix which indicates a relation between a deviation of the material characteristic of a material from a reference value thereof and an amount of correction of the at least one processing condition, where P(i) are material characteristic values, where P0(i) are reference values for respective material characteristics, where L is a number of processing condition set values, and where M is a number of the material characteristic values, and
(iii) correct the at least one processing condition using:

$$\underline{C(i) = C0(i) * (1 + \sum (T2(i,k) * (S(k)/S0(k) - 1)))}, \quad (i = 1-L, k = 1-N),$$

where C(i) (i = 1-L) are correction values for respective processing conditions, where T2(i,k) (i = 1-L, k = 1-N) is an influence function matrix which indicates a relation between a deviation of a measured state variable to a reference value and a correction amount of the at least one processing condition, where S(k) (k = 1-N) is a state variable, where S0(k) (k = 1-N) is a reference state variable, and where N is a number of the state variable.

Amended independent claim 13 recites, *inter alia*, a method for press-forming at least one section of a material according to at least one predetermined forming condition, comprising

measuring a state variable comprising a metal mold distortion amount, or the state variable and at least one of state variables comprising a punch reaction, a metal mold temperature, a work piece deformation amount or a work piece temperature during the formation of the at least one portion of the material,

determining from a first moment to a second moment at least one particular processing condition using (i) a first influence function matrix for indicating a relation between a material characteristic of the material and a correction amount of the at least one particular processing condition, and (ii) a second influence function matrix for indicating a relation between the state variable and the correction amount of the at least one particular processing condition;

correcting an initialization value C0(i) of the at least one processing condition using:

$$C0(i) \text{ (after correction)} = C0(i) \text{ (initialization value)} * (1 + \sum_{(i=1-L, j=1-M)} (T1(i,j) * (P(j)/P0(j)-1)))$$

where T1(i,j) is an influence function matrix which indicates a relation between a deviation of the material characteristic of a material from a reference value thereof and an amount of correction of the at least one processing condition, where P(j) are material characteristic values, where P0(j) are reference values for respective material characteristics, where L is a number of processing condition set values, and where M is a number of the material characteristic values; and

correcting the at least one processing condition using:

$$C(i) = C0(i) * (1 + \sum (T2(i,k) * (S(k)/S0(k)-1))), \quad (i = 1-L, k = 1-N),$$

where C(i) (i = 1-L) are correction values for respective processing conditions, where T2(i,k) (i = 1-L, k = 1-N) is an influence function matrix which indicates a relation between a deviation of a measured state variable to a reference value and a correction amount of the at least one processing condition, where S(k) (k = 1-N) is a state variable, where S0(k) (k = 1-N) is a reference state variable, and where N is a number of the state variable.

Amended independent claim 15 recites, *inter alia*, a method for press-forming at least one section of a material according to at least one predetermined forming condition, comprising

measuring a state variable comprising a metal mold distortion amount, or the state variable and at least one variable from state variables which comprise a punch reaction, a metal mold temperature, a work piece deformation amount or a work piece temperature during a formation of the at least one section of the material, and storing one or more measured state variables for every formation of the at least one section of the material,

comparing at least one variable with at least one previously-measured or previously-obtained one of the state variable to generate a comparison result, and

determining from a first moment to a second moment at least one processing condition using an influence function matrix for indicating a relation between the state variable and a correction amount of the at least one processing condition; and

correcting the at least one processing condition using:

$$C(i) = C0(i) * (1 + \sum (T2(i,k) * (S(k)/S0(k)-1))), \quad (i = 1-L, k = 1-N),$$

where C(i) (i = 1-L) are correction values for respective processing conditions, where C0(i) is an initialization value, where T2(i,k) (i = 1-L, k = 1-N) is an influence function matrix which indicates a relation between a deviation of a measured state variable to a reference value and a correction amount of

the at least one processing condition, where $S(k)$ ($k = 1-N$) is a state variable, where $S0(k)$ ($k = 1-N$) is a reference state variable, where L is a number of processing condition set values, and where N is a number of the state variable.

The Trausi Patent relates to a forging system having a furnace with heating elements to heat a billet which is pressed against a die at a controlled rate and pressure, where a signal processor controls the temperature, pressure and rate as a function of parameters entered on a keyboard and the signal processor displays those parameters along with real time values of temperature, pressure and distance for the billet in a graphical interface. (See, e.g., the Trausi Patent, Abstract).

As an initial matter, Applicants respectfully assert that neither the Trausi Patent, taken alone or in combination with the Kuttner Patent nor the Bowden Patent, fails to teach or suggest a processing condition controller configured to correct an initialization value of the at least one processing condition using: $C0(i)$ (after correction) = $C0(i)$ (initialization value) * $(1 + \sum (T1(i,j) * (P(j)/P0(j) - 1)))$ ($i = 1-L$, $j = 1-M$), where $T1(i,j)$ is an influence function matrix which indicates a relation between a deviation of the material characteristic of a material from a reference value thereof and an amount of correction of the at least one processing condition, where $P(j)$ are material characteristic values, where $P0(j)$ are reference values for respective material characteristics, where L is a number of processing condition set values, and where M is a number of the material characteristic values, and correct the at least one processing condition using: $C(i) = C0(i) * (1 + \sum (T2(i,k) * (S(k)/S0(k) - 1)))$, ($i = 1-L$, $k = 1-N$), where $C(i)$ ($i = 1-L$) are correction values for respective processing conditions, where $T2(i,k)$ ($i = 1-L$, $k = 1-N$) is an influence function matrix which indicates a relation between a deviation of a

measured state variable to a reference value and a correction amount of the at least one processing condition, where $S(k)$ ($k = 1-N$) is a state variable, where $S0(k)$ ($k = 1-N$) is a reference state variable, and where N is a number of the state variable, as explicitly recited in amended independent claim 11 of the above-identified application, and the Examiner does not assert that they do. Additionally, Applicants respectfully assert that the Trausi Patent, taken alone or in combination with the Kuttner Patent and the Bowden Patent, fails to teach or suggest **correcting the at least one processing condition using: $C(i) = C0(i) * (1 + \sum (T2(i,k) * (S(k)/S0(k) - 1)))$, ($i = 1-L$, $k = 1-N$)**, as explicitly recited in amended independent claims 13 and 15 of the above-identified application, *much less*, **correcting an initialization value of the at least one processing condition using: $C0(i) \text{ (after correction)} = C0(i) \text{ (initialization value)} * (1 + \sum (T1(i,j) * (P(j)/P0(j) - 1)))$, ($i = 1-L$, $j = 1-M$)**, as also explicitly recited in amended independent claim 13 of the above-identified application, and the Examiner does not assert that they do.

Further, in the Office Action, the Examiner fails to specifically address an explicit recitation provided in amended independent claims 11, 13 and 15 as being disclosed by any of the Trausi Patent, the Kuttner Patent and/or the Bowden Patent. In particular, the Examiner does not and cannot point to any portion of these references as allegedly teaching or suggesting **a measurement of a state variable comprising a metal mold distortion amount, or the state variable and** at least one of state variables comprising a punch reaction, a metal mold temperature, a work piece deformation amount or a work piece temperature during the formation of the at

least one portion of the material, as also explicitly recited in amended independent claims 11, 13 and 15.

Indeed, the Examiner does not even refer to a **metal mold distortion amount**, *much less* a **state variable comprising metal mold distortion amount** as allegedly being taught or suggested by any of the above-identified references, and *certainly not* a **detector** thereof. Rather, the Examiner appears to rely on the Trausi Patent as alleging disclosing a state variable detector configured to measure at least one of state variables comprising a punch reaction or a metal mold temperature, without more, as purportedly teaching the state variable detector recited in amended independent claim 11 and the measurement of a state variable, as recited in amended independent claims 13 and 15, which Applicant respectfully asserts is fundamentally flawed and erroneous. (See Office Action, pp. 2, 3 and 6).

Further, the Examiner contends that a punch reaction is allegedly a "rate of movement". (*Id.*, pp. 3 and 6). Applicants respectfully assert this contention is also incorrect. Rather, Applicants respectfully assert that one having ordinary skill in the art would understand, especially in view of the description thereof throughout the specification of the present application, that a punch reaction is a type of load or force. (See, e.g., Substitute specification, para. [0056]). Indeed, to clarify the subject matter recited in the claims with respect to a punch reaction, new claims 21-23 which depend from amended independent claims 11, 13 and 15 have been added and recite that, *inter alia*, "**...the punch reaction is monitored using a load cell.**"

Further, Applicants respectfully assert that the Kuttner Patent and the Bowden Patent fail to cure the above-described deficiencies of the Trausi Patent, and

the Examiner does not assert that they do. Instead, as indicated in the Office Action, the Examiner relies on these newly-cited publications as alleging disclosing the subject matter which the Examiner admits the Trausi Patent does not disclose. (See Office Action, pp. 5-6 and 8). In particular, the Examiner confirms that the Trausi Patents fails to disclose the **determination from a first moment to a second moment of at least one particular processing condition** from at least one of a forming speed of the at least one portion of the material, a blank holding force or a metal mold temperature as a function of at least two of the at least one first characteristic, the at least one second characteristic or the at least one of the state variables, wherein **the determination is performed using ... a second influence function matrix for indicating a relation between a state variable and the correction amount of the at least one particular processing condition**, as explicitly recited in amended independent claims 11, 14 and 15. Then, the Examiner relies on the Kuttner Patent as alleging curing this deficiency to teach such recited subject matter. (*Id.*)

However, Applicants respectfully assert that the Kuttner Patent fails to cure the deficiency of the Trausi Patent to teach or suggest at least the **determination from a first moment to a second moment of at least one particular processing condition** ..., [where] the determination is performed using ... **a second influence function matrix for indicating a relation between a state variable and the correction amount of the at least one particular processing condition**, as recited in amended independent claims 11, 13 and 15.

First, Applicants respectfully assert that the feed-forward feedback control system described in column 3, lines 10-16 of the Kuttner Patent, on which the Examiner

relies, in no way teaches or suggests the **determination from the first moment to the second moment of at least one particular processing condition**. This is at least because a feed-forward feedback control system does not in and of itself teach or suggest a **determination from the first moment to the second moment of at least one particular processing condition**. Further, the empirical value matrix described in the Kuttner Patent is with respect to the input data, and not discrete moments (i.e., the first moment to the second moment), as explicitly recited in amended independent claims 11, 14 and 15.

Second, Applicants respectfully assert that the Kuttner Patent also fails to teach or suggest a **second influence function matrix for indicating a relation between a state variable and the correction amount** of the at least one particular processing condition, as also explicitly recited in amended independent claims 11, 14 and 15. Rather, as indicated in the Office Action, the boxes shown in Figure 1 of the Kuttner Patent on which the Examiner relies as purportedly teaching or suggesting such recitation, describe the "regulation or correction of the material profile" and "actual value of the material profile." Applicants respectfully assert that, as provided in the Kuttner Patent, the material profile is not and cannot be equivalent to a state variable, as explicitly recited in amended independent claims 11, 13 and 15. Rather, the material profile appears to be just another characteristic, similar to the material thickness, based on the description of the Kuttner Patent, e.g., "there may optionally be a profile and thickness measuring device" (Kuttner Patent, col. 4, Ins., 43-44). Thus, it certainly follows that the Kuttner Patent fails to teach or suggest a **relation between a state**

variable and the correction amount, as explicitly recited in amended independent claims 11, 13 and 15.

Applicants respectfully assert that the Bowden Patent fails to cure at least the above described deficiencies of the Kuttner Patent, and the Examiner does not assert that it does.

Moreover, Applicants respectfully assert that the Trausi Patent, the Kuttner Patent and the Bowden Patent effectively teach away from one another based on each of these publications describing specific systems and methods which can not necessarily be used in parts (i.e., without the rest of their respective systems) or integrated with other systems. Indeed, each of these publications describe subsystems and components as being integral to the larger system described therein, thereby effectively teaching away from substituting or adding elements from other systems.

Therefore, for at least the reasons described herein above, Applicants respectfully assert that the rejection of amended independent claims 11 and 13, and claims 12 and 14 which depend therefrom, respectively, under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Trausi Patent in view of the Kuttner Patent are now moot, and should be withdrawn. Further, for at least the reasons described herein above, Applicants respectfully assert that the rejection of amended independent claim 15, and claims 16-18 which depend therefrom, under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Trausi Patent in view of the Kuttner Patent and the Bowden Patent is now moot, and should be withdrawn.

III. **NEW CLAIMS 21-23**

New claims 21-23 have been added above to cover certain exemplary embodiments of Applicants' invention as described in the above-identified application. Exemplary support for the addition of new claims 21-23 can be found in the originally-filed application, including the specification, drawings and/or claims thereof. (See, e.g., Substitute Specification, para. [0026]).

In particular, new claims 21-23 depend from amended independent claims 11, 13 and 15, respectively. Therefore, Applicants respectfully that the Trausi Patent, taken alone or in alleged combination with the Kuttner Patent and the Bowden Patent, also fails to teach or suggest the subject matter recited in new claims 21-23 for at least the reasons described herein above.

IV. CONCLUSION

In light of the foregoing, Applicants respectfully assert that pending claims 11-18 and 21-23 are in condition for allowance. Prompt consideration, reconsideration and allowance of the present application are therefore earnestly solicited. If any issues remain outstanding, the Examiner is invited to contact the undersigned via the telephone number provided below.

Respectfully submitted,

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